

REMARKS

Claims 2, 4-6 and 8-13 are pending. Claims 2, 4-6 and 8-13 have been amended herein. Support for the amendments is based on page 12, lines 24-26 which describe that the fluid maybe a liquid. Applicants' undersigned representative thanks Examiner Soohoo for the courtesies extended during the telephone interview of March 12, 2008. Applicants separate record of the substance of the Interview is included in the remarks below.

Applicants' Response to the Objection to the Specification

During the course of the Interview the Examiner has objected to the specification for referring to claim numbers and required correction. In response thereto, a substitute specification is submitted herein pursuant to 37 C.F.R. §1.125(a).

Further, the substitute specification has been amended to accommodate the currently amended claims directed to a liquid processing device and to clarify the invention in response to the rejections under 35 U.S.C. §112 and §101, addressed below. The changes are summarized as follows:

(a) the title has been amended to coincide with the preamble of the amended claims to read "LIQUID PROCESSING DEVICE";

(b) the term "field converter" has been deleted or changed to read --arrangement of pieces-- as supported by page 2, lines 20-27 of the original specification which describes the field converter as an arrangement of pieces;

(c) in the BACKGROUND OF ART section, mentions concerning field converters are deleted; and

(d) application examples 1, 2 and 7 have been deleted.

Applicants do hereby submit that no new matter has been entered.

Applicants' Response to the Claim Rejections under 35 U.S.C. § 112

Claims 2, 4-6 and 8-13 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Office maintains that the present invention is not enabling. Specifically, the Office asserts that one of skill in the art could not make and/or use the invention because there is insufficient description of how the fluid processing of the device works. Specifically the Office Action states that there is inadequate teaching of the (1) operating mechanism which processes the fluid and (2) the change that is occurring to the fluid, i.e. there is no teaching of a "measurable change in physical property" of the fluid.

In response thereto, applicants have amended the claims and have clarified the description within the specification. As discussed during the interview, there is an adequate description within the specification of how to make and use the claimed "liquid processing device." There is no reference to field conversion within the claims, nor within the amended specification. In other words, the specification does clearly describe the arrangement of the material pieces within the fluid processing device and how a fluid is to pass through the device. See page 12, line 15 to page 14, line 21; page 19, line 13 to page 20, line 27 and Fig. 6 of original specification. Further, the original specification does describe a measurable change made to fluid which is processed

through the device. Page 14, lines 15-17 of the specification describes that microorganism propagation in water is suppressed. Support for this assertion is set forth below in response to the Rejection under 35 U.S.C. §101.

Therefore, in summarizing a response to the deficiencies raised in the rejection, applicants note as follows. The “operative mechanism” is the arranged material pieces. The physical property being processed is the suppression of microorganism propagation. There is direct measurable evidence of this physical change as described below in response to the rejection under 35 U.S.C. §101. Hence, applicants respectfully submit that the claimed liquid processing device is enabled within the meaning of 35 U.S.C. §112, first paragraph.

Applicants’ Response to the Claim Rejections under 35 U.S.C. §101

Claims 2, 4-6 and 8-13 are rejected under 35 U.S.C. § 101 because the claimed invention lacks patentable utility. Specifically, the Office Action asserts that there is no evidence of a measurable “field” or a change in a “field.” The rejection focuses on the description of the device as a field converter and asserts that there is no sufficient measurable evidence or description to detect a “field” as described in the specification. As discussed in the course of the interview, applicants have removed the use of the term “field converter” from the claims, and have further herein removed the use of the term from the specification due to the confusion caused thereby.

Further, the rejection repeats the argument of the §112 rejection that there is no physical change to the fluid. As noted above, there has been evidence provided of physical changes to liquid resulting from the liquid processing device within the specification. Specifically, as discussed during the interview, the specification at pages 27-28 (Application example 5) and the Nomura §1.132 Declaration of February 27, 2007 evidence that the fluid processing device has an anti-microbial affect. In order to further support the utility of the presently claimed invention, applicants have submitted herein additional declarations under 37 C.F.R. §1.132 from applicant Syuushi Nomura, Dr. Kenei Man and Dr. Shinobu Watarai. Their experiments are summarized as follows.

I. Anti-microorganism of the liquid processing device

With regard to the characteristic of "anti-microorganism," of the presently claimed invention, 5 experiments indicate similar results further to the prior experiments set forth in the §132 Declarations filed with the response of February 27, 2007. The experiments submitted herewith were conducted by three different scientists utilizing three different facilities and employing different kinds of species of microorganism.

The 5 experiments are:

- (1) Application example 5 in the specification
- (2) Certificate of experiment by Syuushi NOMURA
- (3) Test-1 in the Certificate of experiment by Kennei MAN
- (4) Test-2 in the Certificate of experiment by Kennei MAN
- (5) Certificate of experiment by Shinobu WATARAI

(1) & (2) Applicant Syuushi Nomura's Testing

The applicant respectively requests the Office to consider Application example 5, pages 27-28 of the specification with the current experiment.

Title: Further Examination of sterilization power of the water that passed through the fluid processing device.

By: Syuusi NOMURA

The experiment is similar to the experiment as described under the sub-title of Application example 5 in the originally filed specification. However, the comparison of the processed water with non-processed water is further clarified. In addition, the experiment was carried out 24 hours from the inoculation, though the Application example 5 in the specification had been carried out 3 hours from the inoculation.

Specifically, the experiment entailed, obtaining the processed water from distilled water which was passed through the fluid processing device of the present invention. Non-processed intact distilled water, was used as a comparative example. A fungus liquid was inoculated into the processed water and the intact distilled water. Thereafter, the viable cell in the processed water and the intact distilled water were counted after the specific time. The difference number of the viable cell between in the processed water and the intact distilled water directly attributes to the existence of processing water by the liquid processing device.

The certificate of experiment by NOMURA demonstrates that in the experiments of 4 species of bacteria, the viable cells inoculated in the processed water by the present invention were not detected after 24 hours.

For example, the certificate of experiment shows: (i) In the experiment of Escherichia coli, the viable cell inoculated the processed water was not detected after 8 hours in table 1-1; and (ii) In the experiment of Staphylococcus aureus, the viable cell inoculated the processed water was not detected after 24 hours in table 2-1. On the other hand, the viable cells inoculated in the intact distilled water were detected in about the same numbers as the ones of beginning, after 24 hours (Please refer to the Table1-2, 2-2, 3-2 & 4-2).

(3) & (4) 37 C.F.R. §1.132 Declaration of Dr. MAN

Title: Sterilization power of the water that passed through the fluid processing device

By: Kenei MAN Ph. D.

The certificate includes two experiments, namely, experiment 1 and experiment 2.

(i) The experiment-1

The bacteria suspension was passed through the liquid processing device and viable cell in the suspension were counted. In the 4 species out of 5 species of bacteria of the experiment, the viable cells in the suspension were completely or almost died. The result illustrates that not only the processed water but also the process itself are useful for sterilization.

(ii) The experiment-2

The fungus liquid was inoculated into the processed water. After incubation, the viable cells in the water were counted. Tap water was passed through the liquid processing device of the present invention. The water is referred to as “the vG7 water”. Additionally, tap water was heat treated at 121°C, then left until it reached room temperature. The heat treated water is called “the sterilized tap water.”

The bacteria suspension was mixed with the vG7 water and the sterilized tap water. After 24 hours, the viable cells in each mixture were counted. The difference number of the viable cell between in the vG7water and the sterilized tap water directly attributes to the existence of processing water by the liquid processing device.

The result shows that in the 4 species of bacteria out of 5 species, the viable cells inoculated in the processed water were not detected after 24 hours. The 4 species of bacteria in the MAN's experiment are different species of bacteria in the NOMURA's experiment, described above.

(5) 37 C.F.R. §1.132 Declaration of Dr. WATARAI

Title: Anti-virus activity of vG7-treated water to feline calicivirus virus

By: Shinobu WATARAI Ph D

To obtain the sterilized vG7-treated water, distilled water was passed through the liquid processing device of the present invention, then was filtered through a 0.22 micro meter membrane filter. To obtain the sterilized (Control) water, intact distilled water was also filtered through a 0.22 micro meter membrane filter.

Feline calicivirus virus (FCV) solution was mixed with the sterilized vG7-treated water and the sterilized water. Tissue-culture infectious dose (TCID50) in host cells, Crandell's feline kidney (CRFK) cells, was determined for each of the two mixtures. The difference of the TCID50 between the mixture with the sterilized vG7-treated water and the sterilized water (Control), directly attributes to the existence of processing water by the liquid processing device. Specifically, the TCID50 of the mixture with the sterilized vG7-treated water was less than 200.

On the other hand, the TCID₅₀ of the sterilized water (Control) was 2×10^5 . The result shows that the processed water has the inactivation activity against feline calicivirus virus.

II. Physical characteristic changes evidenced by the Declarations of February 27, 2007.

In addition to giving the anti-microorganism affect, evidence has been submitted that the liquid processing device changes the material make-up of passing water, as demonstrated within the two §132 declarations submitted on February, 2007. In the §132 Declaration submitted on February 27, 2007 by Shyuusi NOMURA in the processed water, the dissolved hydrogen was detected, while in the intact distilled water, the dissolved hydrogen was not detected, i.e. the amount of the dissolved water is lower than the detection limit. Also, in the §132 submitted on February 27, 2007 by Masaharu TAKAO Ph.D. major elements, such as sodium (Na), magnesium (Mg), silicon (Si), potassium (K) and calcium (Ca) had significantly lower concentration in the vG7 processed water than in the non-vG7 processed water, with the exception of aluminum (Al). See second paragraph under the sub-title of "3.2 Element concentration" and also Figure 2.

Based on the above, applicants assert that the liquid processing device has the character of "anti-microorganism." As such, a measurable physical change does result from the use of the claimed liquid processing device; wherefore, the device has utility pursuant to 35 U.S.C. §101. In light of the above, the attached Declarations and the prior Declarations of February 27, 2007, favourable reconsideration is respectfully requested.

Application No.: 10/500,042
Art Unit: 1723

Amendment
Attorney Docket No.: 042449

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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Enclosures: Substitute specification (Marked-Up)
Substitute specification (Clean Version)
Declaration of Syuushi Nomura
Declaration of Dr. Watarai
Declaration of Dr. Man